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## Managing the nutrition program for cow comfort

### Abstract

Comfortable cows are contented cows. However, cows may be comfortable in their environment but also experience some discomfort because of the nutrition program. A good nutritional management program will improve desircow comfort by providing: 1) the proper balance of nutrients for efficient production; 2) buffers for high energy rations to prevent acidosis and consore feet; 3) rations in which grain cannot be consumed too rapidly; 4) rations with proper amounts of nonfiber carbohydrate; 5) highest quality forages during hot weather; 6) additional moisture in total mixed rations during hot weather; 7) a readily available water source; and 8) a bunk management system that encourages cows to eat.; Dairy Day, 1997, Kansas State University, Manhattan, KS, 1997;

### Keywords

Dairy Day, 1997; Kansas Agricultural Experiment Station contribution; no. 98-100-S; Report of progress (Kansas Agricultural Experiment Station and Cooperative Extension Service); 792; Dairy; Cow comfort; Acidosis; Forage quality; Nonfiber carbohydrates; Water

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## **MANAGING THE NUTRITION PROGRAM FOR COW COMFORT**

*J. R. Dunham*

### **Summary**

Comfortable cows are contented cows. However, cows may be comfortable in their environment but also experience some discomfort because of the nutrition program. A good nutritional management program will improve cow comfort by providing: 1) the proper balance of nutrients for efficient production; 2) buffers for high energy rations to prevent acidosis and sore feet; 3) rations in which grain cannot be consumed too rapidly; 4) rations with proper amounts of nonfiber carbohydrate; 5) highest quality forages during hot weather; 6) additional moisture in total mixed rations during hot weather; 7) a readily available water source; and 8) a bunk management system that encourages cows to eat.

(Key Words: Cow Comfort, Acidosis, Forage Quality, Nonfiber Carbohydrates, Water.)

### **Introduction**

The goal of a well-managed nutrition program should be to maximize dry matter intake for efficient milk production. All of the items considered in managing the nutrition program affect cow comfort, and comfortable cows are efficient producers. Assuming that a comfortable environment is provided, several nutritional management practices will affect cow comfort.

### **Balanced Rations**

Everyone knows that rations balanced for energy, protein, minerals, and vitamins are essential for efficient production. Yet, a ration balanced for these nutrients still can result in depressed feed intake caused by acidosis. Acidosis is a digestive upset that causes cow dis-

comfort. Eventually, acidosis will lead to painful foot problems, and cows will be less likely to walk and stand at the feed bunk. Most sore feet originally were caused by acidosis.

High energy rations for early lactation cows should contain buffer to help maintain a desirable pH in the rumen. When rumen pH drops below 6.2, potential exists for acidosis and uncomfortable cows. Anytime the ration contains  $>.77$  Mcal NEL/lb, a buffer should be added at a rate of .75% of the ration dry matter.

High energy rations tend to be rather minimal in fiber content. Even though the ration may contain at least 17% ADF and 27% NDF, acidosis problems still can result from inadequate effective fiber. Effective fiber stimulates cud chewing (rumination). Forages ground or chopped too finely will result in less cud chewing and acidosis.

High levels of nonfiber carbohydrates (NFC) also may cause acidosis. The level of NFC in a ration is an indication of the concentration of starch. Starch is digested rapidly in the rumen and will cause the pH of the rumen to decline rapidly. Anytime the ration contains  $>42\%$  NFC, other sources of energy such as fat should be substituted for some of the high NFC ingredients.

Feeding a total mixed ration (TMR) prevents cows from selective consumption of ration ingredients and reduces the potential for acidosis by reducing the rate at which cows consume grain. Cows also must eat forage with every bite of grain. Good management will provide a TMR with adequate fiber length.

Cows experiencing sore feet will probably benefit from including zinc methionine in the ration to improve hoof growth.

### **Summer Feeding Programs**

Hot weather is associated with depressed feed intake when cows are experiencing heat stress. Cows eat less when under heat stress, because the process of digestion creates additional heat. Feeding programs can be adjusted to make the cows more comfortable and improve feed consumption.

High quality forage will be consumed more readily during the summer because it results in less heat production (heat increment). Even though a ration is formulated with the same fiber content from high or low quality forages, cows will consume more energy and dry matter from the rations containing the high quality forage. Selecting a higher quality forage for summertime and a lower quality forage for winter rations is a good nutritional management program for cow comfort. Relative feed value for alfalfa should be at least 160.

The ration should be concentrated with all nutrients during heat stress, so that less total dry matter is required to meet nutrient requirements. Be sure the fiber content of the ration will meet minimum requirements. Adding fat sources is usually the most feasible way to increase energy density, but some additional grain may be used. Adding a pound of fat will replace 2.25 lb of grain.

When a TMR is fed, cows that are heat stressed will consume more dry matter if water is added to the ration. Increasing the

moisture content to about 50% will have a cooling effect on the ration, and cows will consume it faster.

### **Water**

Water is the least expensive and one of the most important ingredients in dairy rations. Dry matter intake and water consumption are correlated closely. Water consumption will increase about 50% when the temperature is in the 90's compared to the 70's. Therefore, additional water space will be beneficial on hot days. The water source should be close by and should provide 2 linear ft of space for 20 cows during normal weather. Consider doubling the water space allowance during hot weather.

### **Bunk Management**

Bunk management is important for maximum feed intake, because cow comfort will be affected. Allow at least 1.6 linear ft/cow when feeding a TMR. Separating heifers into their own feeding group will reduce competition from older cows.

Feed should be available almost around the clock. All of the feed should be consumed just prior to the next feeding. If not, clean the bunks to prevent spoiled feed from accumulating. Feed cows at least twice daily to keep feed fresh. Feeding early in the morning and late in the evening is recommended during heat stress.

A covered bunk is recommended for cow comfort and to help keep feed fresh. A sprinkling system at the bunk will encourage cows to come to the bunk more often. The bottom of the bunk should be about level with the cows' feet and should have a slick surface.